

AMD Projects

Innovate • Transform • Protect

CDC's Advanced Molecular Detection (AMD) program fosters scientific innovation in genomic sequencing, epidemiology, and bioinformatics to transform public health and protect people from disease threats.

AMD Projects: Understanding Meningococcal Urethritis

Using AMD to analyze an emerging form of meningococcal disease

In 2015, public health researchers found multiple cases of urethritis caused by *Neisseria meningitidis*, the bacteria that cause meningococcal disease. Urethritis is an infection that causes swelling and irritation of the urethra (the tube that carries urine from the bladder). It is typically associated with sexually transmitted diseases, like gonorrhea. Meningococcal urethritis is thought to be very rare and very little is known about how it emerged and how it is spread.

To find answers, CDC researchers are turning to AMD to better understand how common meningococcal urethritis is and how it spreads. Scientists will investigate whether it occurs on its own or only when other types of germs are present. Importantly, the project will look to see if the strain causing meningococcal urethritis can also cause the more typical and serious forms of meningococcal disease (bloodstream infections and meningitis).



CDC researchers will work with a state health department to see why meningococcal urethritis has been on the rise.



To do this, CDC scientists will study samples collected by a state health department from people who are sick with urethritis, as well as their sexual partners. Using AMD methods, researchers will test the samples for *N. meningitidis* and other germs that can cause urethritis. They will then analyze the *N. meningitidis* DNA and look for changes that could have led it to cause urethritis or to become resistant to antibiotics. They will also look to see if the bacteria gained parts of its DNA from *Neisseria gonorrhoeae*, the bacteria that cause gonorrhea.

This research will provide information that is essential to understanding meningococcal urethritis. It will also help guide practices to help prevent the disease from spreading further and controlling it when a case is identified.



For more information on meningococcal disease, please visit the CDC website, www.cdc.gov/meningococcal